US 20170047767A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2017/0047767 A1

BAKER et al. (43) Pub. Date: Feb. 16, 2017

(54) **CONNECTOR-FREE MAGNETIC CHARGER/WINDER**

(71) Applicant: **Apple Inc.**, Cupertino, CA (US)

(72) Inventors: **John J. BAKER**, Cupertino, CA (US); **Fletcher R. ROTHKOPF**, Los Altos, CA (US)

(21) Appl. No.: **15/243,872**

(22) Filed: **Aug. 22, 2016**

Related U.S. Application Data

(62) Division of application No. 14/263,949, filed on Apr. 28, 2014, now Pat. No. 9,450,446.

Publication Classification

(51) **Int. Cl.**
H02J 7/02 (2006.01)
H02J 7/00 (2006.01)

(52) **U.S. Cl.**
CPC ***H02J 7/025*** (2013.01); ***H02J 7/0042*** (2013.01); *G04C 5/005* (2013.01)

(57) **ABSTRACT**

A method and apparatus for charging an electronic device include rotating a magnetically attractable element, or element, within the electronic device. Rotating a magnet external to the electronic device simultaneously rotates the element. Rotating the element causes an electrically generating device, such as a generator, to create an electric charge in the electronic device. The electric charge may be used to power the electrically generating device, or the electric charge may be transmitted to an internal power supply in order to charge another component or components. In another embodiment, the external magnet may wind a spring inside a device.